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Kam-Wing Li

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER

JUNTIMA, NITTAYA

ART UNIT

PAPER NUMBER

2416

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/728,657	Applicant(s) LI, KAM-WING	
	Examiner NITTAYA JUNTIMA	Art Unit 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,6,8-16,18-24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,8-16,18-24 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This action is in response to the amendment filed 9/2/2008.
2. Claims 1, 5-6, 8-16, 18-24, and 26 are pending (claims 2-4, 7, 17, and 25 were canceled).

Claim Objections

3. Claims 13, 18, and 20 are objected to because of the following informalities:

- in claim 13, line 12, "then" has been changed to "the";
line 15, "filtered" should be inserted before "phase";
- in claim 18, line 1, "claim 17" should be changed to "claim 13";
- in claim 20, line 13, "then" has been changed to "the";
line 16, "filtered" should be inserted before "phase."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. **Claims 1, 5-6, 8-12, 24 and 26** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The amended claims 1 and 24 contain the following subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

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application was filed, had possession of the claimed invention: the limitation “generating stuff bits for a data stream according to the plesiochronous network protocol based on at least a non-linear function of a phase difference between the phase difference signal and the rate at which stuff bits are generated.” Specifically, a non-linear function of *a phase difference* between (a) *the phase difference signal* and (b) *the rate at which stuff bits are generated* is not disclosed anywhere in the specification.

6. Claims **1, 5-6, 8-12, 24 and 26** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claims 1 and 24, lines 11-14, the specification fails to disclose how the stuff bits are generated based on a non-linear function of *a phase difference* between (a) *the phase difference signal* and (b) *the rate at which stuff bits are generated*.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16, 18, and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16, line 2, the limitation "the first network protocol" lacks antecedent basis.

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Claims 18 and 23, lines 1-2, the limitation "the data stream formatted according to the plesiochronous network protocol comprises a DS1 data stream" lacks antecedent basis (it is suggested that the claim be amended to include limitations as recited in claims 5 and 6).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 13-16 and 18-19** are rejected under 35 U.S.C. 102(b) as being anticipated by Choi (US 5,131,013).

Regarding **claim 13**, as shown in Fig. 5, Choi teaches an apparatus (receiver 303) comprising:

A buffer (elastic store 202) for storing data (VT payload) extracted from a data stream (VT-G signal) according to a synchronous network protocol (SONET), wherein the extracted data is stored in the buffer in response to a first timing signal (synchronous timing signal, i.e., the write clock signal) associated with the data stream (col. 6, lines 9-31, col. 3, lines 49-53; see also claims 13 and 16) and the extracted data is read from the buffer (synchronizing elastic store 202) in response to a second timing signal (the read clock signal) associated with a plesiochronous network protocol (asynchronous digital signal) (col. 7, lines 5-10, 20-22, and claim 13).

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A phase detector (phase detector 203) coupled to receive the first timing signal and the second timing signal to determine a phase difference between the first timing signal (the write clock signal) and the second timing signal (the read clock signal) and to generate a phase difference signal (a write-read separation signal generated by a phase detector 203). See col. 6, lines 53-col. 7, lines 26, col. 3, lines 55-67; see also col. 3, lines 55-col. 4, line 1).

A filter (low pass filter 205) coupled to sample the phase difference signal in response to the first timing signal (low pass filter 205 contains a sampler 206, Fig. 3 that samples the raw write-read address separation signal output from phase detector 203 to smooth the effects of the phase jumps in the write-read address separation signal caused by the gaps in the write clock signal, col. 7, lines 10-20, see also col. 6, lines 62-67 and col. 3, lines 67-col. 4, lines 29 and claim 11) and to generate a phase metric signal based on the sampled phase difference signal (a transfer function $F(z) = (1/n) (1 + z^{-1} + \dots z^{-n})$ is based on sampled write-read address separation signal) and to filter the phase metric signal in a synchronous domain (the stuff control signal output from the low pass filter 205 is based on sample clock signal that is synchronous to the SONET VT frame rate, col. 6, lines 62-col. 7, lines 8; see also col. 4, lines 19-55).

A stuff control generator (a $\frac{1}{4}$ DS2 mapping and stuff control 509) coupled to receive the filtered phase metric signal to generate a stuff rate signal based on the filtered phase metric signal (a stuff decision generated by a $\frac{1}{4}$ DS2 mapping and stuffing control 509 to control the read clock must comprise stuff rate based on stuff control signal output from filter 205, see col. 7, lines 16-20, see also col. 6, lines 62-67 and col. 4, lines 12-18), wherein a relationship between the filtered phase metric signal and the stuff rate signal is non-linear (a relationship between (a)

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the stuff control signal generated by low pass filter 205 which has a non-linear transfer function of $F(z)$ and (b) a stuff decision generated by 509 is non-linear, col. 6, lines 67-col. 7, lines 27).

Regarding **claim 14**, Choi teaches that the phase metric (a transfer function $F(z) = (1/n)(1 + z^{-1} + \dots z^{-n})$ based on sampled write-read address separation signal) comprises an average number of data values stored in the buffer (an average sampled write-read address separation/phase difference signal) (using a moving average filter, see col. 6, lines 62-67 and col. 4, lines 40-55).

Regarding **claim 15**, Choi also teaches that the synchronous network protocol comprises a synchronous optical network (SONET) protocol (col. 6, lines 52-60 and claims 13 and 16).

Regarding **claim 16**, Choi also teaches that the data stream formatted according to the synchronous network protocol comprises a VT1.5 formatted data stream (col. 6, lines 52-60 and claim 16).

Regarding **claim 18**, Choi teaches that the data stream according to the plesiochronous network protocol comprises a DS 1 data stream (the read data signal from the elastic store 202, Fig. 5 is mapped into DS 1 digital signal by unit 509, col. 6, lines 52-60, col. 7, lines 20-22, and claims 13 and 16).

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Regarding **claim 19**, it is inherent in Choi that the first timing signal (synchronous timing signal, i.e., the write clock signal = VT1.5 clock signal rate of 1.728 Mb/s and VT1.5 frame signal of 8 KHz, col. 5, lines 32-33) and the second timing signal (asynchronous timing signal, i.e., the read clock signal = DS1 clock signal rate of 1.544 Mb/s and frame signal of 8 KHz, col. 6, lines 52-60 and claims 14 and 16) have approximately the same average frequency.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 20-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (US 5,131,013) in view of Tanis (US 2004/0120360 A1).

Claim 20 is a system claim containing limitations similar to that of claim 13 and is therefore rejected under the same reason set forth in the rejection of claim 13 with an addition of a switch fabric.

As shown in Fig. 1, Tanis teaches a switch fabric (40) that outputs a SDF frame, which is a modified version of a SONET STS-1 frame containing modified version of VTs, into an output side interface 70C DS3 in an outbound direction (paragraphs 4 and 18-20).

Given the teaching of Tanis, it would have been obvious to one skilled in the art at the time of the invention was made to further modify the teaching of Choi such that a switch fabric

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would be included as claimed. The suggestion/motivation to do so would have been to enable the outputs from switch fabric to be converted into format originally received at the input to the input side interface of the switch fabric (Tanis, paragraph 19).

Claims 21-23 contain limitations similar to method claims 14, 16, and 18, respectively, and are therefore, rejected under the same reason set forth in the rejection of claims 14, 16, and 18, respectively.

Response to Arguments

12. Applicant's arguments filed on 9/2/2008 have been fully considered but they are not persuasive.

A. In the remarks regarding claims 1 and 24, the applicant argues that the non-linear relationship recited in the claims as amended is between the filtered phase difference signal and the stuff bit generation which is not disclosed by Choi.

In response, the Examiner respectfully disagrees. It is submitted that the amended claims 1 and 24 do not recite that the non-linear relationship is between the filtered phase difference signal and the stuff bit generation. However, the claims actually recite "generating stuff bits for a data stream according to the plesiochronous network protocol based on at least a non-linear function of a phase difference between the phase difference signal and the rate at which stuff bits are generated" which is not supported by the original specification as explained above in section

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5 of this Office Action. Therefore the argument whether this feature is not anticipated by Choi is irrelevant.

B. In the remarks regarding claims 13 and 20, the applicant argues that Choi does not disclose a non-linear relationship between the filtered phase difference signal and the stuff bit generation.

In response, the Examiner respectfully disagrees. As shown in Fig. 5, Choi clearly teaches an apparatus (receiver 303) that generates a phase difference signal that is filtered in the synchronous domain (a write-read address separation signal from a phase detector 203 is sampled based on the sample clock signal which is synchronous to the SONET VT frame rate, filtered by a moving average digital filter whose transfer function is $F(z) = (1/n) (1 + z^{-1} + \dots z^{-n})$ and output as a stuff control signal, col. 6, lines 62-col. 7, lines 8; see also col. 4, lines 19-55).

And since the low pass filter 205 in Fig. 5 has a non-linear transfer function of $F(z) = (1/n) (1 + z^{-1} + \dots z^{-n})$, the stuff control signal output from the filter 205 must be non-linear. Therefore, a relationship between (a) the non-linear stuff control signal and (b) a stuff decision generated by a $\frac{1}{4}$ DS2 mapping and stuffing control 509 is non-linear because a non-linear signal/function and anything yields a non-linear relationship. It is therefore submitted that the claim limitation of a relationship between the filtered phase metric signal and the stuff rate signal is non-linear is met.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

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Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NITTAYA JUNTIMA whose telephone number is (571)272-3120. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571.272.6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business

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Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nittaya Juntima/
Examiner, Art Unit 2416
12/8/2008

/FIRMIN BACKER/
Supervisory Patent Examiner, Art Unit 2416